

A REVISION OF THE GENUS *CYATHIGER* (COLEOPTERA: PSELAPHIDAE)\*

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## Abstract

The relationships within the Cyathigerini are briefly examined with *Cyathiger* King being considered as very close to the African *Cyathigerodes* Jeannel and the Oriental *Paracyathiger* Jeannel. The two known Australian species of *Cyathiger*, *punctatus* King and *simulator* Lea, are redescribed, and two new species are described, *leai* and *kingi* from Queensland.

## Introduction

The Cyathigerini comprise one of the most distinctive tribes of the Pselaphidae, being recognized at that level comparatively early by Raffray (1890) even though it consisted only of *Cyathiger punctatus* King. The tribe currently consists of five genera: *Cyathiger* King with two Australian species, *Cyathigerodes* Jeannel with 28 African species, *Paracyathiger* Jeannel with about 26 oriental species, *Denicyathiger* Jeannel with one species from New Guinea, and *Manuleiger* Jeannel from Sri Lanka. The Cyathigerini are readily distinguished from all other Pselaphidae by the following combination of characters: body coarsely and closely punctate; two visible tergites and sternites, the first occupying almost the entire length of the abdomen; seven to ten antennomeres with the last forming a quite large club; femora grooved to receive the tibiae, metathorax deeply impressed to receive head, and first abdominal sternite deeply impressed to receive the large last antennomeres. Members of the tribe apparently curl into a compact ball when disturbed.

*Cyathiger* was created by King (1865) for a new species, *punctatus*, from New South Wales. Over the next eighty years more than twenty species were placed in this genus from Southeast Asia and New Guinea, and a second Australian species, *simulator* Lea, was added in 1910. With the discovery of a second new species of the tribe from Africa, Jeannel (1951) created three new genera for the African and Oriental faunas, restricting *Cyathiger* to the type species *punctatus* (he was apparently unaware of the description of *simulator* Lea). *Manuleiger remyi* Jeannel was later described from Sri Lanka (Jeannel 1961).

Jeannel's (1951) division of *Cyathiger* into four genera was essentially based on three criteria: number of antennomeres; relative proportions in size of the penis, parameres and phallobase of the male aedeagus; and width of the frontal lobe of the head. As Leleup (1974) has already pointed out, Jeannel erred in separating the African *Cyathigerodes* from the Australian *Cyathiger* by stating that the females of *Cyathigerodes* possess only six antennomeres. Leleup established that the sexes of both genera possess seven antennomeres. The genitalic proportions which were used to separate *Cyathiger* and *Cyathigerodes* from the Oriental *Paracyathiger* (which also have seven antennomeres in both sexes), are now invalidated by the range of genitalic variation now known for *Cyathigerodes* (Leleup 1974) and for *Cyathiger* in this paper.

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Jeannel's third criterion of the width of the frontal lobe has not been clear to me when used to discriminate *Cyathiger* from the few specimens of *Denicyathiger* and *Paracyathiger* which have been available. As it appears to me, only *Denicyathiger* and *Manuleiger* are distinctly separable from the Australian *Cyathiger* by their possessing ten and nine antennomeres respectively. On the known criteria for separation, *Cyathiger*, *Cyathigerodes*, and *Paracyathiger* are very close and perhaps should be synonymized. However, as I have on hand only the Australian species, and my knowledge of the other genera is based only on literature and a few unidentified *Paracyathiger* and *Denicyathiger* from New Guinea, I will restrict this paper to a revision of the *Cyathiger* of Australia.

The holotypes and most of the paratypes of *C. leai* are to be placed in The Australian National Insect Collection (ANIC), Canberra.

### *Cyathiger* King

*Cyathiger* King 1865: 174. Raffray 1890: 134; 1904: 304; 1908: 301. Jeannel 1951: 109. Type species *Cyathiger punctatus* King 1865: 174, fixed by monotypy.

### Key to males

It would be wise to check the genitalia of males from any population discovered to confirm identifications and to reveal the presence of any new species.

1. Impression of antennal club conspicuously pebbled, glabrous; New South Wales. . . . . *punctatus* King
- Impression of antennal club smooth or minutely roughened, surface dull or shining . . . . . 2
2. Impression of antennal club with dull surface, minutely roughened; Queensland . . . . . *leae* n. sp.
- Impression of antennal club glabrous, shining . . . . . 3
3. Antennal club with ventral angle distinct (Fig. 3); Queensland . . . . .
- Antennal club with ventral margin smoothly rounded (Fig. 4); New South Wales. . . . . *simulator* Lea

### *Cyathiger punctatus* King

(Fig. 1)

*Cyathiger punctatus* King 1865: 174. Raffray 1904: 308; 1908: 302. Lea 1912: 49. Jeannel 1951: 110. Type localities: Blue Mountains, and Petersham, New South Wales. Type series dispersed, the known syntypes are in ANIC, South Australian Museum, Australian Museum, and Museum National d'Histoire Naturelle, Paris.

*Cyathiger reitteri* Schaufuss 1886: 242. Type localities: Blue Mountains, and Petersham, New South Wales. Type female. Synonymized by Raffray 1904: 308.

Length 1.20-1.23 mm. Male antennal club with setae on outer surface longer than short decumbent setae on body, inner surface deeply concave, surface pebbled, setae not apparent in impression at 100x except on extreme lateral margins, club with short but distinct angulation on ventral margin,

evenly rounded on dorsal margin. Lateral carinae of first sternite with length of interruptions about half length of each tooth, teeth sloping to increase in height posteriorly. Mesofemora with single ventral tooth. Male genitalia with phallobase and parameres short, both together about as long as penis.

Female similar to male, antennal club with dorsal margin strongly angulate.

*Specimens examined*:— AUSTRALIA: NEW SOUTH WALES: 2 ♀♀, Petersham, Topotype S. Misko det. 1976 (ANIC); 1 ♀, same locality (South Australian Museum); 1 ♂, "Australia" (Cornell University).

### Comments

King's specimens have been dispersed to several museums, with only females remaining in the collections of The Australian Museum, the South Australian Museum, and ANIC. Additional specimens are known to be in the Paris Museum, Cornell University, and the Schaufuss collection. The only males known are in the Paris Museum (Jeannel 1951: 110, figured the male genitalia and antennal club), and Cornell University (Ithaca, New York). Jeannel's figure of the male antennal club is somewhat misleading as the club was apparently rotated dorsally when the illustration was made. As a result, the weak ventral angle was considerably prolonged, and the general proportions were distorted in the figure.

*Punctatus* is distinct by the impression of the male antennal club being pebbled, and the comparatively large gaps between the teeth of the sternal carinae. It is most similar to *leai* by the modified surface of the club impression, and the single medial tooth on the posterior margin of the mesofemora. The females of these two species are only separable by the more distinct ventral angulation of the antennal club in *punctatus*.

King reported that this species is found under burned logs half buried in the ground.

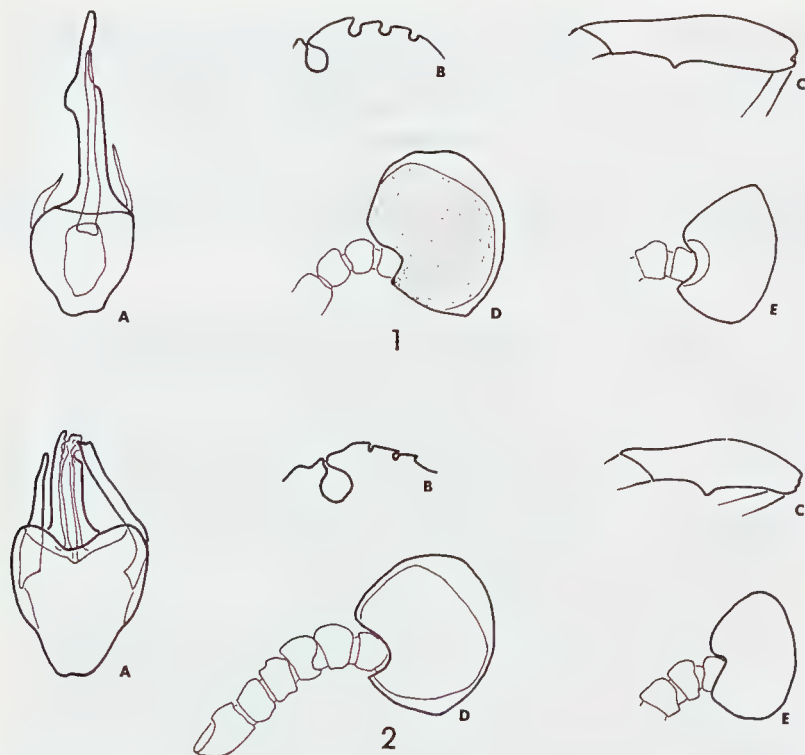
### *Cyathiger leai* n. sp.

(Fig. 2)

Length 1.15-1.23 mm. Male antennal club with outer surface densely clothed with hairs, inner surface deeply concave, minutely roughened, setae as dense as on outer surface but shorter, readily seen at 60X, dorsal angulation of club weakly defined, ventral angulation as distinct as that of dorsal. Teeth on lateral carinae of first abdominal sternum short, elongate, with short posterior prolongation at apices. Mesofemora with single ventral tooth. Male genitalia with phallobase moderately large, slightly longer than parameres or penis, which are of equal lengths.

Female similar to male, with antennal club ellipsoidal, smoothly prolonged on dorsal margin.

*Specimens examined*:— AUSTRALIA: QUEENSLAND: Holotype ♂, nr Cape Tribulation, 16.06S, 145.27E, 50 m, 21.vi.1971, Taylor & Feehan, rainforest, ANIC 322. *Paratypes*: 1 ♂, Mt. Lewis, 16.33S, 145.13E, 1010 m, 20.vi.1971, Taylor & Feehan, rainforest, berleseate ANIC 320; 1 ♀, same data except, ANIC berleseate 319; 1 ♀, same locality, c. 970 m, 29.vi.1973, R. W. Taylor; 1 ♀, nr Cape Tribulation, 50 m, 20.vi.1971, berleseate.



Figs 1-2. (1) *Cyathiger punctatus* King; (2) *C. leai* n. sp. A—dorsal view male genitalia, B—left lateral view sternal carinae, C—posterior view right mesofemur, D—mesal view left antennal club of male, E—mesal view left antennal club of female.

ANIC 326; 1 ♂, 3 ♀♀, Thornton Range, 16.15S, 145.26E, 23.vi.1971, Taylor & Feehan, rainforest, ANIC berleseate 324; 1 ♂, 1 ♀, same data except, 100 m; 4 ♀♀, Alexandra Bay, 16.12S, 145.26E, 50 m, 24.vi.1971, Taylor & Feehan, rainforest, berleseate ANIC 331.

#### Comments

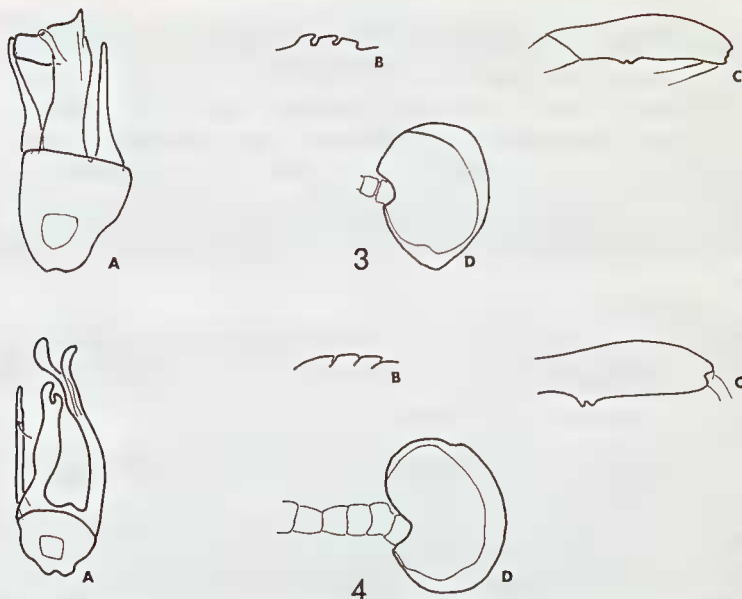
*Leai* is most similar to *punctatus* as mentioned in the discussion of that species. It is separable by the minutely roughened inner surface of the male antennal club impression, and the teeth of the sternal carinae being barely separated.

#### *Cyathiger kingi* n. sp.

(Fig. 3)

Length 1.23 mm. Male antennal club densely clothed with setae, setae slightly longer than short appressed setae on body, ventral angulation distinct, dorsal angulation feebly indicated, inner surface deeply excavated, appearing





Figs 3-4. (3) *C. kingi* n. sp., (4) *C. simulator* Lea. A—dorsal view male genitalia, B—left lateral view sternal carinae, C—posterior view right mesofemur, D—mesal view left antennal club of male.

glabrous, faintly punctulate, setae not apparent in impression at 100X. Teeth of lateral carinae of sternum short, rectangular, with posterior angulation at apex of each tooth. Mesofemora with two close-set teeth on posterior margin of tibial groove. Male genitalia with phallobase moderately long, penis and parameres about same length, slightly longer than phallobase.

Female unknown.

*Specimens examined*:— AUSTRALIA: QUEENSLAND: Holotype ♂, Dingo Creek, 1 km E Traveston, c. 80 m, 18.iii.1973, 26.18S, 152.48E, R. J. Kahout, poor rainforest, berleseate ANIC 456.

#### Comments

This species shares with *simulator* the deep, glabrous excavation of the antennal club, and possesses two teeth on the ventral margin of the mesofemur. The teeth of the abdominal carinae possess a posterior angulation in *kingi*, while in *simulator* the teeth are sharply incised at an oblique angle anteriorly. The antennal club of the male has a distinct ventral angulation, while in *simulator* the margin lacks any distinct angles.

#### *Cyathiger simulator* Lea

(Fig. 4)

*Cyathiger simulator* Lea 1912: 49. Type locality: Otford, New South Wales. Holotype male in South Australian Museum, Adelaide.

Length 1.80 mm. Male antennal club with setae of outer surface as long as those on body, club oval, lacking any angulation of outer margins, inner surface minutely punctulate in impression, appearing glabrous. Teeth on lateral carinae of first sternite short, barely separated, sharply incised at an oblique angle anteriorly, smoothly confluent and receding in height posteriorly. Right mesofemur with two teeth on posterior margin of tibial groove, left mesofemur with one tooth, anterior margin of groove with five separate smaller teeth in basal half. Male genitalia strongly asymmetrical, penis offset toward small thin right paramere, left paramere apically branched, phallobase short.

Female unknown.

*Specimens examined*:— AUSTRALIA: NEW SOUTH WALES: Holotype ♂ Otford (South Australian Museum). The type is associated with two ants (one winged) and bears the label "Inquiline".

### Comments

This species is recorded from the nest of the ant, *Stenamma longiceps*, in Lea's original description of the species.

It is very similar to *kingi* in the antennal club being almost circular in outline, and the glabrous impression of the club. *Simulator* lacks any ventral angle of the club, and the male genitalia is markedly asymmetrical.

### Acknowledgements

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